

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Bixler, et al.

Serial No.: 10/719,489 Group Art Unit: 1712

Filed: November 21, 2003 Examiner: Moore, Margaret

Title: INTEGRATED PROCESS FOR PREPARING A SILICONE
 RUBBER COMPOSITION

BRIEF ON APPEAL

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

Subsequent to the filing of the Notice of Appeal received by the U.S. Patent and Trademark Office on July 13, 2006, from which date the period for filing the Appeal Brief is measured in accordance with MPEP 1205.01, the Applicants now submit a Brief on Appeal in response to the Final Rejection set forth in the Final Office Action dated January 13, 2006. A single copy of this Appeal Brief is being submitted in accordance with 37 C.F.R. §41.37 and this Appeal Brief is accompanied by the required fee of \$500.00 under §41.20(b).

The Patent Office is authorized to charge or refund any fee deficiency or excess to Deposit Account No. 08-2789.

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I. Real Party in Interest

The real party in interest is Dow Corning Corporation, to which an Assignment has been recorded at reel 015060, frame 0577.

II. Related Appeals and Interferences

There are no related Appeals or Interferences.

III. Status of Claims

Claims 1-19 were original. Of these claims, claims 1-16 were previously elected in response to a restriction requirement. Claims 17-19 were withdrawn from consideration as non-elected claims that were subjected to the restriction requirement.

Claims 1-16 have been finally rejected under 35 U.S.C. §103(a) over Bilgrien et al. (U.S. Pat. No. 5,153,238) in view of Boudreau et al. (U.S. Pat. No. 6,444,154) and are on appeal. A set of the claims on appeal is found in the Claims Appendix.

IV. Status of Amendments

No amendments have been filed subsequent to final rejection. All amendments have been entered and are reflected in the claims in the Claims Appendix.

V. Summary of Claimed Subject Matter

Independent claim 1

Independent claim 1 is directed to an integrated process for compounding a catalyst containing silicone rubber composition comprising a step of blending a composition comprising 100 parts by weight of a high consistency polydiorganosiloxane and about 10 to 80 parts by weight of a treated or untreated reinforcing silica filler. The polydiorganosiloxane and the filler are blended by introducing the filler into a mixer and maintaining the filler in a highly turbulent, fluidized state at a temperature of from 80°C to about 350°C. The filler is maintained at the temperature of from 80°C to about 350°C in the highly turbulent fluidized state while introducing the polydiorganosiloxane. The resulting mixture of the polydiorganosiloxane and the filler is subjected to a shearing force that is sufficient to achieve an average particle size of from 1 to 1000 microns, thereby forming a flowable organopolysiloxane powder composition. The flowable organopolysiloxane powder is directly transferred to a bulk solids cooling device. Accelerated bulk cooling of the flowable organopolysiloxane powder is facilitated in the bulk solids cooling device to a temperature below a temperature selected from the group consisting of (i) the decomposition temperature of a catalyst that is added to the organopolysiloxane composition and (ii) the activation temperature of the catalyst that is added to the organopolysiloxane composition. The bulk cooled flowable organopolysiloxane powder is fed to a massing apparatus, and the organopolysiloxane composition is massed in the massing apparatus at a temperature selected from the group consisting of (i) below the decomposition temperature of the catalyst that is added to the organopolysiloxane composition and (ii) the activation temperature of the catalyst that is

added to the organopolysiloxane composition. A catalytic amount of the catalyst is added to the organopolysiloxane composition either prior to, during, or after massing the bulk cooled flowable organopolysiloxane powder at a temperature selected from the group consisting of (i) below the decomposition temperature of the catalyst and (ii) the activation temperature of the catalyst.

The integrated process claimed in claim 1 not only reduces time to make the catalyst containing silicone rubber composition, but as set forth in paragraph [0004], also eliminates manual handling of the silicone rubber compositions during compounding and forming into a shippable product. Further, as set forth in paragraph [0022], the powdered organopolysiloxane composition is somewhat sticky and easily massed if significant compaction occurs after the desired particle size has been achieved, and that compaction often occurs when the powdered organopolysiloxane composition is allowed to cool relatively undisturbed under ambient conditions. Further, cooling the powdered organopolysiloxane in the same mixer in which the polydiorganosiloxane and the filler are blended would require cooling of the mixer itself, which would add time because of the fact that the components of the mixer would have to be cooled as well, as opposed to the bulk solids cooling device which has no such requirement.

The specific elements of independent claim 1 and the support for each element in the specification is provided below in Table 1.

TABLE 1

Claim 1 elements	Support for the element in the specification
An integrated process for compounding a catalyst containing silicone rubber composition comprising the steps of	Support for this element can at least be found on page 1 in the title of the application and on page 1 in paragraph [0001], page

	3 in paragraph [0010], on page 4 in paragraph [0012], and on page 6 in paragraph [0022], as well as in the Example.
A) blending a composition comprising:	Support for this element can at least be found on page 3 in paragraph [0010] and on page 4 in paragraph [0013], as well as in the Example.
i) 100 parts by weight of a high consistency polydiorganosiloxane,	Support for this element can at least be found on page 3 in paragraph [0010], on page 6 in paragraph [0019], and on pages 8 and 9 in paragraph [0028], and on page 9 in paragraph [0029], as well as in the Example.
ii) about 10 to 80 parts by weight of a treated or untreated reinforcing silica filler,	Support for this element can at least be found on page 3 in paragraph [0010], and page 8 in paragraph [0027], as well as in the Example.
and when said reinforcing filler is untreated	Although this element is optional, support for this element can at least be found on page 3 in paragraph [0010] and on pages 9 and 10 in paragraphs [0030] through [0032], as well as in the Example.
iii) about 10 to 45 weight percent, based on the weight of the reinforcing silica filler, of a treating agent for the reinforcing silica filler	
by introducing the filler into a mixer (1) and maintaining said filler in a highly turbulent, fluidized state at a temperature of from 80°C to about 350°C,	Support for this element can at least be found on page 3 in paragraph [0010] and on pages 4 and 5 in paragraphs [0013] through [0018], as well as in the Example.
maintaining the temperature and the filler in the highly turbulent fluidized state while introducing the polydiorganosiloxane	Support for this element can at least be found on page 3 in paragraph [0010] and on page 6 in paragraph [0019].
and subjecting the resulting mixture to a shearing force sufficient to achieve an average particle size of from 1 to 1000 microns thereby forming a flowable organopolysiloxane powder composition,	Support for this element can at least be found on page 3 in paragraph [0010], on page 5 in paragraphs [0016] and [0017], on page 6 in paragraph [0019], as well as in the Example.
and when required, introducing said treating agent into the mixer (1) prior	Although this element is optional, support for this element

to, during, or after addition of the polydiorganosiloxane,	can at least be found on page 3 in paragraph [0010] and on pages 9 and 10 in paragraphs [0030] through [0032], as well as in the Example.
B) directly transferring the flowable organopolysiloxane powder composition to a bulk solids cooling device (7)	Support for this element can at least be found on page 3 in paragraph [0010] and on pages 6 and 7 in paragraph [0022], as well as in the Example.
and facilitating accelerated bulk cooling thereof to a temperature below a temperature selected from the group consisting of (i) the decomposition temperature and (ii) the activation temperature of a catalyst added in step (D),	Support for this element can at least be found on page 3 in paragraph [0010], on pages 6 and 7 in paragraph [0022], and on page 7 in paragraph [0024], as well as in the Example.
C) feeding the bulk cooled flowable organopolysiloxane powder composition to a massing apparatus (8) and massing the organopolysiloxane composition therein at a temperature selected from the group consisting of (i) below the decomposition temperature and (ii) the activation temperature of a catalyst added in step (D),	Support for this element can at least be found on page 3 in paragraph [0010] and on page 7 in paragraph [0024], as well as in the Example.
D) adding a catalytic amount of a catalyst to the organopolysiloxane composition either prior to, during, or after step (C) at a temperature selected from the group consisting of (i) below the decomposition temperature and (ii) the activation temperature of the catalyst.	Support for this element can at least be found on page 3 in paragraph [0010], on page 7 in paragraph [0024] and on pages 7 and 8 in paragraph [0025], as well as in the Example.

VI. Grounds of Rejection to be Reviewed on Appeal

Claims 1-16 have been finally rejected under 35 U.S.C. §103(a) over Bilgrien et al. (U.S. Pat. No. 5,153,238) in view of Boudreau et al. (U.S. Pat. No. 6,444,154) and are on appeal.

VII. Argument

Rejection of claims 1-16 under 35 U.S.C. § 103(a)

The main issue in the present Appeal revolves around the Examiner's interpretation of *In re Dilnot*, 138 USPQ 248 (CCPA, 1963) and the Examiner's combination of Bilgrien et al. and Boudreau et al. The Applicants contend that the Examiner has failed to establish a *prima facie* case of obviousness with respect to independent claim 1 of the present application due to the misinterpretation of *In re Dilnot* and the improper combination of Bilgrien et al. and Boudreau et al.

The Examiner contends, in the Office Action mailed on July 22, 2005, that “the difference between the instantly claimed process and that in the prior art amounts to the difference between a batch process (Bilgrien et al.) and a continuous process. That is, for each compounding process in Bilgrien et al., the mixing process must end for the cooling process to begin, while in the claims the mixing process can continue because the cooling process is carried on in a different apparatus.” The Examiner then notes that “[i]t has been held that making a batch process continuous is obvious,” by relying on MPEP 2144.04(V)(E), which summarizes *In re Dilnot*, and that “comparable continuous processes are known in the art, as shown by Boudreau [et al.], and thus the skilled artisan would have known how to adapt the batch process in Bilgrien et al. such that it is a continuous process.”

I. Examiner's Arguments Based Upon *In re Dilnot*

The Applicants respectfully assert that the Examiner has misinterpreted the rule of law resulting from *In re Dilnot*, and that the facts of *In re Dilnot* are different from the current situation. As a result, the Applicants respectfully assert that *In re Dilnot* does not

apply to the present situation.

As set forth in MPEP 2144.04, certain situations allow for a shortcut to be used to establish that various common practices require only ordinary skill in the art as a basis for establishing obviousness. Notably, if the Applicant has demonstrated the criticality of a specific limitation, it would not be appropriate to rely solely on case law as the rationale to support an obviousness rejection. MPEP 2144.04(V)(E) cites *In re Dilnot* as providing case law that allows a shortcut to establish that “making continuous” is a common practice that requires only ordinary skill in the art.

To summarize the relevant facts of *In re Dilnot*, the relevant claim in the patent application at issue (claim 22) merely claimed “continuously introducing [a] foam” into a cementitious slurry. The closest prior art reference (Jahjah) disclosed delivering a measured amount of foam into the cementitious slurry. In effect, “the foam is not introduced all at once into the mixture [in claim 22] but must be gradually and hence, continuously, introduced into the mixture until all of the foam has been incorporated.” *In re Dilnot*, 138 USPQ at 252. Based on the record, there was no criticality to continuously introducing the foam into the cementitious slurry. Thus, the obviousness of “making continuous”, as covered in MPEP 2144.04(V)(E), is **only** meant to address the differences between **performing an old step or steps all at once** as opposed to extending the performance of those steps over time to make the process continuous, when such difference is not critical to the invention. A broader interpretation of the scope of *In re Dilnot* is impermissible as the MPEP clearly states that the facts in a prior legal decision must be sufficiently similar to those in an application under examination in order to use the shortcuts provided by MPEP 2144.04.

The Examiner has misinterpreted *In re Dilnot* as establishing obviousness of a continuous process **having different steps** from a prior art batch process, which *In re Dilnot* clearly does not address. As such, the Examiner's use of *In re Dilnot* to reject claim 1 of the present claims is improper.

In the present situation, claim 1 does not merely claim the same steps as disclosed in Bilgrien et al. modified so as to make the process continuous, which would be **required** to establish obviousness of the claim using *In re Dilnot*. Rather, there are clear differences between the steps claimed in claim 1 of the present claims and the disclosure of Bilgrien et al., and the differences are more significant than merely rendering a batch process into a continuous process. Claim 1 of the present claims differs from Bilgrien et al. by the limitation of "directly transferring the flowable organopolysiloxane powder composition to a bulk solids cooling device and facilitating accelerated bulk cooling thereof". This limitation does more than merely modify a batch process into a continuous process, and this limitation is clearly not disclosed in Bilgrien et al. This limitation has significant advantages, including substantially reducing processing time, over the process disclosed in Bilgrien et al. Bilgrien et al. merely discloses cooling the composition in the same mixer in which it is formed. The accelerated bulk cooling claimed in claim 1 of the present claims is **not** merely a prolonged or drawn-out modification of a step disclosed in Bilgrien et al. that is designed to make the process continuous. In fact, by accelerating cooling, as opposed to modifying a batch step to perform the step over time, it is quite the opposite of the situation in *In re Dilnot*. As such, the Examiner has improperly used *In re Dilnot* in an attempt to establish obviousness of the integrated process claimed in claim 1 of the present claims over the disclosure of Bilgrien et al.

II. Improper Combination of Bilgrien et al. and Boudreau et al.

As alluded to above, the Examiner has also argued that Boudreau et al. discloses a comparable continuous process to that disclosed in Bilgrien et al., and thus the skilled artisan would have known how to adapt the batch process in Bilgrien et al. such that it is a continuous process. The Examiner's reasoning fails because Boudreau et al. is non-analogous art to the present invention, and there is no motivation to combine Bilgrien et al. and Boudreau et al. because the skilled artisan, confronted with the same problems as the inventor of the claimed invention and with no knowledge of the claimed invention, would **not** select the elements from Boudreau et al. for combination with Bilgrien et al. in the manner claimed in claim 1 of the present claims. See *In re Rouffet*, 149 F.3d 1350 (Fed. Cir. 1992).

As the Board is well aware, a two-prong test must be satisfied to establish that a prior art reference is analogous art to the claimed invention:

- 1) the prior art reference must be from the same field of endeavor, regardless of the problem addressed, and
- 2) if the prior art reference is not within the field of the inventor's endeavor, the prior art reference must be reasonably pertinent to the particular problem with which the inventor is involved.

See MPEP 2141.01(a); *In re Clay*, 966 F.2d 656 (Fed. Cir. 1998). *In re Clay* further explains the second prong of the above test by stating "[a] reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have

commended itself to an inventor's attention in considering his problem." See MPEP 2141.01(a).

The Applicants respectfully contend that neither the first nor second prongs of the test for analogous art can be met in the present situation. As to the first prong, PTO classification is some evidence of analogy, but similarities and differences in structure and function carry more weight. See MPEP 2141.01(a)(II). Boudreau et al. is not from the same field of endeavor as the invention claimed in claim 1 of the present claims because Boudreau et al. is directed to the field of liquid silicone rubbers, and the liquid silicone rubbers of Boudreau et al. are not rendered into powdered or particulate materials as is done in the instant process as claimed in claim 1. This is a significant difference because the nature of a method of making a liquid composition is entirely different from a method that involves the intermediate step of forming a flowable organopolysiloxane powder composition. It is well known by those of skill in the art that processing considerations for powder compositions are very different from those for liquid compositions. As such, a process for making a liquid composition is not within the same field of endeavor as a process that involves forming powder compositions as claimed in claim 1 of the present claims.

As to the second prong, Boudreau et al. is neither reasonably pertinent to the present invention because it is not a reference that logically would have commended itself to an inventor's attention in considering his problem. See MPEP 2141.01(a); *In re Clay*, 966 F.2d 656. More specifically, the problems faced in the present invention include those associated with making a powder composition. Specifically, it is important to the present invention that manual handling be eliminated by making the process

integral. As well known by those skilled in the art, manual handling of powders requires extreme care to prevent loss of powder from the powder composition during manual handling. Further, as set forth on page 7 in paragraph [0022], “the powdered organopolysiloxane composition is . . . somewhat sticky and easily massed” which massing is undesirable prior to cooling. As such, the inventors of the present invention were faced with the unique problem of minimizing loss of the powder composition due to manual handling, while preventing massing prior to cooling. Such problems are obviously absent when making a liquid composition (as in Boudreau et al.), and one faced with the problems that are unique to working with powder compositions would not have been directed to Boudreau et al. which, as set forth above, is directed toward making liquid compositions. As such, Boudreau et al. is not a reference that logically would have commended itself to an inventor’s attention in considering his problem when dealing with powder compositions.

For similar reasons as set forth above, there would also be no motivation to combine the disclosures of Bilgrien et al. and Boudreau et al. Specifically, Bilgrien et al., similar to the present invention, is directed to a method that involves the step of making a powder composition. As such, the skilled artisan, confronted with the same problems as the inventor of the claimed invention in dealing with powder compositions and with no knowledge of the claimed invention, would **not** select the elements from the process of making the liquid composition of Boudreau et al. for combination with Bilgrien et al. in the manner claimed in claim 1 of the present claims.

To summarize, the Examiner has failed to establish a *prima facie* case of obviousness of independent claim 1 under 35 U.S.C. §103(a) over Bilgrien et al. in view

of Boudreau et al. because the Examiner has failed to satisfy the first criterion, i.e., the requirement that there be a motivation to combine the reference teachings, required to establish a *prima facie* case of obviousness. See MPEP 2143. Specifically, the Examiner has misinterpreted the facts of *In re Dilnot*, Boudreau et al. is not analogous art to the present invention, and there is no motivation to combine the disclosures of Bilgrien et al. and Boudreau et al. to teach each and every element of claim 1 of the present claims.

In view of the foregoing, the Applicants respectfully submit that claim 1 is both novel and non-obvious in view of the prior art, and is therefore allowable. The remaining claims, specifically claims 2-16, depend either directly or indirectly from claim 1. As such, it is respectfully submitted that these claims are also allowable.

The Commissioner is authorized to charge the Deposit Account No. 08-2789, in the name of Howard & Howard Attorneys, P.C. for any additional fees or credit the account for any overpayment.

Respectfully submitted,

HOWARD & HOWARD ATTORNEYS, P.C.

September 13, 2006
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VIII. Claims Appendix

1. (Original) An integrated process for compounding a catalyst containing silicone rubber composition comprising the steps of

A) blending a composition comprising:

- i) 100 parts by weight of a high consistency polydiorganosiloxane,
- ii) about 10 to 80 parts by weight of a treated or untreated reinforcing silica filler,

and when said reinforcing filler is untreated

- iii) about 10 to 45 weight percent, based on the weight of the reinforcing silica filler, of a treating agent for the reinforcing silica filler

by introducing the filler into a mixer (1) and maintaining said filler in a highly turbulent, fluidized state at a temperature of from 80°C to about 350°C, maintaining the temperature and the filler in the highly turbulent fluidized state while introducing the polydiorganosiloxane and subjecting the resulting mixture to a shearing force sufficient to achieve an average particle size of from 1 to 1000 microns thereby forming a flowable organopolysiloxane powder composition, and when required, introducing said treating agent into the mixer (1) prior to, during, or after addition of the polydiorganosiloxane,

- B) directly transferring the flowable organopolysiloxane powder composition to a bulk solids cooling device (7) and facilitating accelerated bulk cooling thereof to a temperature below a temperature selected from the group consisting of (i) the

decomposition temperature and (ii) the activation temperature of a catalyst added in step (D),

- C) feeding the bulk cooled flowable organopolysiloxane powder composition to a massing apparatus (8) and massing the organopolysiloxane composition therein at a temperature selected from the group consisting of (i) below the decomposition temperature and (ii) the activation temperature of a catalyst added in step (D),
- D) adding a catalytic amount of a catalyst to the organopolysiloxane composition either prior to, during, or after step (C) at a temperature selected from the group consisting of (i) below the decomposition temperature and (ii) the activation temperature of the catalyst.

2. (Original) An integrated process according to Claim 1, where the high consistency polydiorganosiloxane has a viscosity within a range of about 6×10^4 to 1×10^8 mPa·s at 25°C.

3. (Original) An integrated process according to Claim 1 wherein the high consistency polydiorganosiloxane comprises one or more of trimethylsiloxy end-capped polydimethylsiloxane, vinyltrimethylsiloxy end-capped polydimethylsiloxane, vinyltrimethylsiloxy end-capped polydimethyl/vinylmethylsiloxane copolymer, and trimethylsiloxy end-capped polydimethyl/vinylmethylsiloxane copolymer.

4. (Original) An integrated process according to Claim 1, where the reinforcing silica filler is a fumed silica having a surface area within a range of about 75 m²/g to 1000 m²/g.

5. (Original) An integrated process according to claim 1 wherein the reinforcing silica filler comprises from 20 to 50 parts by weight per 100 parts by weight of the high consistency polydiorganosiloxane.

6. (Original) An integrated process according to claim 1 where the treating agent is a low molecular weight hydroxy end-blocked polydimethylsiloxane fluid.

7. (Original) An integrated process according to claim 1 wherein the treating agent comprises about 15 to 35 weight percent, based on the weight of the reinforcing silica filler.

8. (Original) An integrated process according to claim 1 wherein in step (A) the temperature is within a range of about 90°C to 180°C.

9. (Original) An integrated process in accordance with Claim 1 wherein the catalyst is an organoperoxide catalyst.

10. (Original) An integrated process in accordance with claim 9 wherein the organoperoxide catalyst comprises 2,4-dichlorobenzoyl peroxide and/or 2,5-

bis(tertiarybutyl peroxy)-2,5-dimethylhexane.

11. (Original) An integrated process according to claim 9 wherein the organic peroxide comprises about 0.1 to 10 weight percent, based on the weight of the composition.

12. (Original) An integrated process according to claim 9 wherein the peroxide catalyst is added in a mixing step conducted after step (C).

13. (Original) An integrated process according to claim 1 wherein the catalyst is a platinum catalyst in combination with a polyorganosiloxane having at least two silicon-bonded hydrogen atoms per molecule.

14. (Original) An integrated process according to Claim 1 wherein the accelerated bulk cooling of Step B is facilitated using one or more belt coolers, jacketed mixers, fluidized mixers through which cooling air may be blown, and flow-through apparatus having one or more cooling elements positioned therein (7).

15. (Original) An integrated process according claim 1 wherein the massing apparatus (8) is an extruder.

16. (Original) An integrated process in accordance with Claim 1 wherein the flowable powder passes through a means adapted to eliminate or reduce lumps, large

particles and agglomerates (6) prior to bulk cooling.

Claims 17-19, (Withdrawn)

IX. Evidence Appendix

None.

X. Related Proceedings Index

None.